

Claims

1. A process for controlling the fatty acid chain composition of triglycerides wherein a feed stream comprising a mixture of triglycerides containing at least one long fatty acid chain, said mixture being substantially free of trishort chain triglycerides, is treated in at least two fractionation steps to fractionate between long chain triglycerides at temperatures above 200 °C and pressures between 0.01 and 10 Pa, wherein one of said steps fractionates between trilong chain triglycerides and mono- and dilong chain triglycerides and the other one of said steps fractionates between monolong chain triglycerides and dilong chain triglycerides.
2. The process according to claim 1 wherein at least one of the said fractionation steps is performed at a temperature above 270 °C.
3. The process according to claim 1 wherein at least one of said fractionation steps is performed in a fractionation means, selected from a distillation unit, a short path distillation column, a centrifugal still and a high vacuum wiped film evaporator.
4. The process of claim 3, wherein the at least one of said fractionation steps is performed in a short path distillation column.
5. The process according to claim 3 wherein said fractionation steps are performed in one or in two or more separate short path distillation columns.
6. The process according to claim 5, wherein a fluid from one of said columns is treated in another fractionation means at a temperature above 200°C.
7. The process according to claim 1 wherein the triglyceride mixture comprising the feed stream derives from an interesterification of trishort, trimedium and/or trilong chain triglycerides containing the desired fatty acid chains of the desired end product triglyceride.
8. The process according to claim 1 wherein the feed stream has been stripped of trishort chain triglycerides in a stripping column to remove trishort chain triglycerides from said triglycerides before said fractionation steps.
9. The process according to claim 8 wherein the stripped trishort chain triglycerides comprise about 5-40 % of the triglycerides before stripping
10. The process according to claim 9, wherein the stripped trishort chain triglycerides comprises about 10-30 % of the triglycerides before stripping.

11. The process according to claim 1 wherein the triglycerides comprising the feed stream derive from an enzymatic techniques using short and/or long fatty acid chain compounds containing the desired fatty acid chains of the desired end product triglyceride.
12. The process according to claim 1 wherein trishort chain stripping is performed after said fractionation steps, with water vapour, at a temperature of about 180-250 °C and at a pressure of about 10-2000 Pa.
13. The process according to claim 1 wherein both monolong and dilong chain triglycerides are distilled in a first fractionation step at temperatures above 270 °C to provide a fractionation from trilong chain triglycerides.
14. The process according to claim 13 wherein the distillate from said first fractionation step containing both mono- and dilong chain triglycerides is supplied to a second fractionation step in order to recover the monolong chain triglycerides as distillate and the dilongs as residue at temperatures from about 210 to 270 °C.
15. The process according to claim 14 wherein the monolong and/or dilong chain triglycerides are purified in a stripping step.
16. The process according to claim 1 wherein the majority of the monolong chain triglycerides are distilled off in a first fractionation step.
17. The process according to claim 16 wherein the monolong chain triglycerides are purified in a further step.
18. The process according to claim 16 wherein the residue from the first fractionation step is processed in a second fractionation step at a temperature above 270 °C, and at a pressure of about 0.01-10 Pa, in order to recover the dilong chain triglycerides.
19. The process according to claim 18 wherein the dilong chain triglyceride content of the distillate after the fractionation is more than 50 %, with the rest being monolong and trilong chain triglycerides.
20. The process according to claim 19 wherein the dilong chain triglyceride content of the distillate after the fractionation is more than 75 %, with the rest being monolong and trilong chain triglycerides.

21. The process according to claim 19 wherein the dilong chain triglyceride content of the distillate after the fractionation is more than 90 % with the rest being monolong and trilong chain triglycerides.
22. The process according to claim 18 wherein the distillate from the second fractionation step is supplied to a stripping step in order to purify the dilong chain triglycerides.
23. The process according to claim 1 wherein the feed stream to the distillation column is obtained from enzymatic or chemical processes.
24. The process according to claim 1 wherein a third long chain triglyceride fractionation is performed in order to obtain a purer product.
25. The process according to claim 1 wherein the purity of the monolong and/or dilong chain triglyceride product is at least about 75 %.
26. The process according to claim 25, wherein the purity of the monolong and/or dilong chain triglyceride product is at least about 90 %.
27. The process according to claim 25, wherein purity of the monolong and/or dilong chain triglyceride product is at least about 95 %.
28. The process according to claim 1 wherein the long chain fatty acids in the triglyceride contain from 12 to 24 carbon atoms and are selected from the group consisting of lauric, myristic, palmitic, stearic, arachidic, behenic, lignoceric, palmitoleic, oleic, gadoleic, arachidonic, linoleic, α -linolenic acids and, DHA and EPA.
29. The process according to claim 1 wherein the short chain fatty acids in the triglyceride contain from 2 to 4 carbon atoms and are selected from the group consisting of acetic, propionic and butyric acid.
30. A method of using the process according to claim 1 for the providing of target triglycerides having a controlled fatty acid chain distribution and composition, said use comprising the steps of
 - defining at least one target long chain fatty acid of the target triglyceride(s);
 - optionally defining the target position(s) of said long chain fatty acid(s);

-providing a triglyceride starting material containing a significant amount of the target triglyceride(s) having a desired fatty acid chain distribution;

- at need, removing trishort chain triglycerides from said starting material to provide a feed stream substantially free of trishort chain triglycerides;

- treating said feed stream in at least two fractionation steps at temperatures above 200 °C and pressures between 0.01 and 10 Pa in order to fractionate between the long chain triglycerides; and

-recovering the target triglyceride(s) containing at least one of said target long chain fatty acid(s) having the desired fatty acid chain distribution.

31. The method according to claim 30 wherein the target triglyceride(s) is/are recovered at a purity above 75%.

32. The method according to claim 30 wherein the target triglyceride(s) is/are recovered at a purity above 90%.

33. The method according to claim 30 wherein said defining of the target long chain fatty acid(s) and/or positions is done in response to customer requirements.